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ABSTRACT

This study examined the development of imitation under naturalistic conditions. Participating were 320 parents, who provided diary records of imitation by their 12-, 15-, and 18-month-old infants over a 7-day period. Approximately half of the infants were first-borns and half had older siblings. The findings indicated that infants of all ages acquired one to two new behaviors per day by imitation. There were age-related changes in the quality rather than the quantity of behaviors acquired through imitation. Older infants imitated more multi-step sequences and substituted more objects during reenactment than did younger infants. There were also sibling-related changes in the quality of behaviors acquired through imitation. Infants with siblings imitated more behaviors spontaneously and their imitation was characterized by a higher level of pretense than infants without siblings. The findings were highly consistent with those obtained under more controlled laboratory conditions. The similarity of the two sets of findings increases the validity of current laboratory research on imitation and indicates that imitation is a powerful mechanism by which infants acquire new behaviors in the course of their everyday lives. (Author/AMC)

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THE ROLE OF SIBLINGS IN THE DEVELOPMENT OF IMITATION

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Abstract

The present study examined the development of imitation under naturalistic conditions. In this study, 320 parents provided diary records of imitation by their 12-, 15-, and 18-month-old infants over a 7-day period. Approximately, half of the infants were first-born and half had older siblings. Overall, infants of all ages acquired 1 to 2 new behaviors per day by imitation. Furthermore, there were age-related changes in the quality rather than the quantity of behaviors acquired through imitation. Older infants imitated more multi-step sequences and substituted more objects during re-enactment than younger infants. There were also sibling-related changes in the quality of behaviors acquired through imitation. Infants with siblings imitated more behaviors spontaneously and their imitation was characterized by a higher level of pretense than infants without siblings. These findings are highly consistent with those obtained under more controlled laboratory conditions. The similarity of these two sets of findings increases the validity of current laboratory research on imitation and indicates that imitation is a powerful mechanism by which infants acquire new behaviors in the course of their everyday lives.

Introduction

Currently, there is renewed interest in Vygotsky's social interactionist view of cognitive development. Contemporary studies have examined the effect of a number of different social partners on children's emerging cognitive skills (e.g., Zukow, 1989). Perner, Ruffman, and Leekam (1994), for example, recently examined the potential role of siblings on the development of children's theory of mind. They found that 3- to 4-year-old children with siblings passed a standard false belief test at an earlier age than children without siblings. Consistent with Vygotsky's original theory, Perner et al. propose that cognitive development does not occur in isolation, but rather is influenced by social experience. Meltzoff and Gopnik (1993) have suggested that imitation may be the developmental precursor to a theory of mind. They have argued, for example, that

imitation of another person's behavior is the first step toward "understanding other minds." Past research on the social factors that influence imitation have focused primarily on the mother as a social partner. Observational studies of sibling interactions have shown that younger siblings do imitate their older siblings (e.g., Lamb, 1978). Little research has, however, concentrated on the quality of these imitated behaviors. Given that siblings play an important role in the development of theory of mind, we hypothesized that siblings might also play a role in the development of imitation.

Procedure

320 12-, 15-, and 18-month-old infants and their parents participated in this study. Approximately, half of the infants were first born and half had older siblings. In order to provide a valid index of infant's imitation in relevant social contexts, parents were asked to provide diary records of their infant's imitative behavior over a 7-day period. This methodology provides a reliable and valid measure of the development of other behaviors and it provides maximum flexibility in recording (Anderson, Field, Collins, Lorch, & Nathan, 1985; Dale, Bates, Beznick, & Morisset, 1989). Diaries were distributed to the infants' parents and parents were familiarized with the procedures they were to use. For each observation, parents were asked to record the action the child imitated, the model, the materials used, the delay, whether the imitation was spontaneous or instructed, and whether it was a new behavior or not.

Results

The total behaviors per day (new, old, repeated) and the errors per day are were collapsed across infant gender and sibling status and are shown in Figure 1 as a function of Age. As shown in Figure 1, there was no significant effect of age on the total number of behaviors that parents recorded and there were few errors in diary completion. Remarkably, the 12-, 15-, and 18-month-old infants acquired approximately 1.4 new behaviors each day by observing the actions of others. This finding suggests that between the ages of 12 and 18 months, imitation is an important mechanism for learning in the real

world. It is also possible, however, that there may be age-related (or sibling-related) differences in the quality of the behaviors imitated (see Baldwin, 1915; Piaget, 1962).

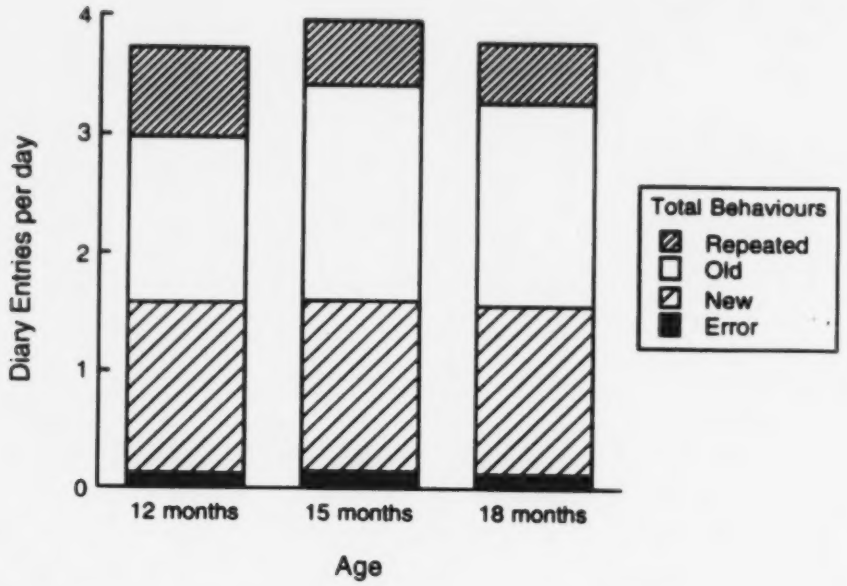

Figure 1. The average number of diary entries made per day as a function of age. Each column also shows the average number of new, old, and repeated behaviors that parents recorded per day as well as the number of errors that parents made in completing the diaries.

Complexity of Behavior

Although the absolute number of new behaviors did not differ as a function of age, the complexity of those behaviors increased as a function of age. Consistent with laboratory studies of imitation, 18-month-old infants imitated more multi-step sequences of behavior than their 12- and 15-month-old counterparts. The 12-month-old infants substituted objects less often during re-enactment than their 15- and 18-month-old counterparts.

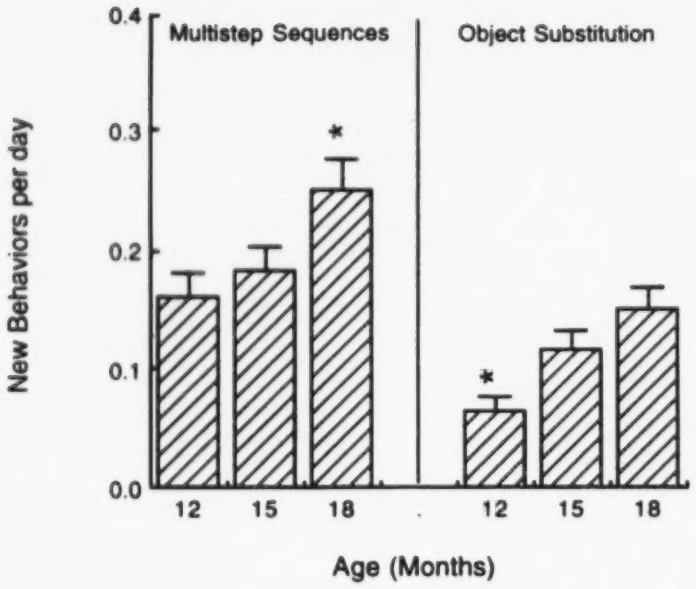

Figure 2. The proportion of new multi-step sequences(+1*SE*) and new object substitutions and (+1*SE*) as a function of Age.

Instruction

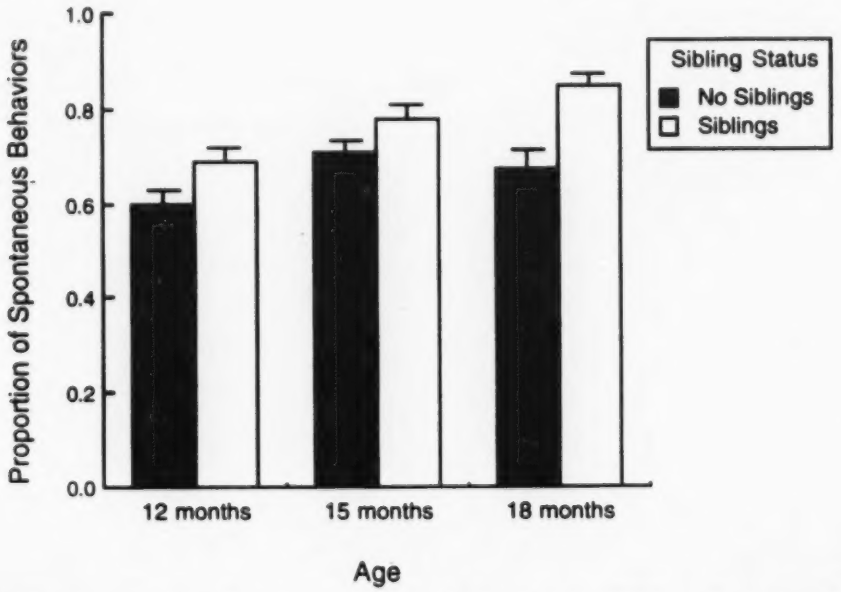

Figure 3. The proportion of new spontaneous behaviors (+1*SE*) as a function of Age and Sibling Status.

Infants with siblings were much more likely than infants without siblings to imitate behaviors spontaneously in the absence of explicit instruction or praise.

Model

The proportion of new behaviors that infants imitated is shown in Figure 4 as a function of Model and Sibling Status. For infants with siblings, approximately half of the actions they imitated were based on actions modeled by other children. For infants without siblings, on the other hand, not surprisingly, their primary model was an adult.

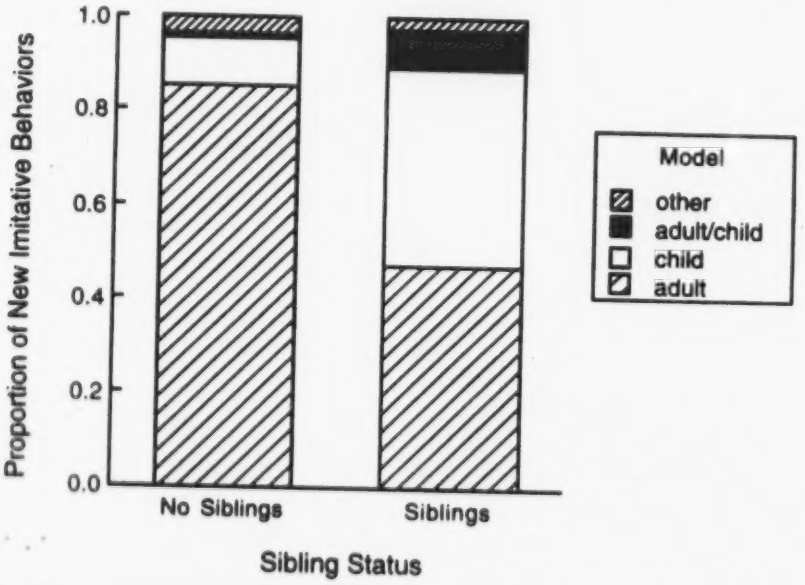

Figure 4. The proportion of new behaviors as a function of Model and Sibling Status.

Joint Pretense

Finally, imitation by infants with siblings was characterized by a higher level of joint pretense than imitation by infants without siblings. As such, the behavior of infants with siblings was highly dynamic and creative (e.g., using the kitchen cupboard as a car) while the behavior of infants without siblings was much more concrete (e.g., cleaning the inside of the shower).

Conclusions

It has been argued that imitation is an important way through which a child learns, modifies behaviors, and becomes socialized. The present findings suggest that older siblings influence the quality rather than the quantity of behaviors acquired through imitation. Consistent with Perner et al., we predict that these early differences may contribute to differences in other cognitive domains (e.g., theory of mind) later in development. This prediction remains to be tested.

It is also important to note that the results of the present, naturalistic study mirror those found under more controlled laboratory conditions. Previous laboratory research, for example, has shown age-related differences in infants' ability to imitate complex, multi-step sequences of behavior (Bauer & Mandler, 1989) and to substitute novel objects when reproducing the original target behavior(s) (Hayne, MacDonald, & Barr, 1997). In the present study, the same developmental patterns emerged when infants' behavior was observed in the course of their everyday lives. The similarity of these two sets of findings increases the validity of current laboratory research on imitation and suggests that there are robust age-related changes in this cognitive domain.

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